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10/781,804	02/20/2004	Neil Holger White Eklund	52493.000363	5187

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EXAMINER

BAIRD, EDWARD J

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/781,804

**Applicant(s)**

EKLUND ET AL.

**Examiner**

EDWARD BAIRD

**Art Unit**

3693

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 20 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☒ Claim(s) 1, 19, 25, and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-8508)  
Paper No(s)/Mail Date See Continuation Sheet
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

Continuation of Attachment(s) 3. Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :04 November 2004, 11 January 2008, 16 January 2008, and 22 January 2008.

### **DETAILED ACTION**

Claims 1 – 26 are pending in this application. Claims 1 – 26 are rejected under 35 U.S.C. 112, 101, and 103(a).

#### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) filed on 04 November 2004, 11 January 2008, 16 January 2008, and 22 January 2008 have been considered. Initialed copies of the Form 1449 are enclosed herewith.

#### ***Specification***

2. Applicant cooperation is requested in correcting any error of which applicant may become aware in the specification.

#### ***Claim Objections***

3. Claim 1, 19, 25, and 26 are objected to because of the following informalities: the term "being used in investment decisioning" is unclear. For purposes of examination, the term will be interpreted to read as: "being used in investment decisions". Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 12, 13, 15, 24 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. **Claim 12** recites the limitation "the remainder of". There is insufficient antecedent basis for this limitation in the claim.

For purposes of examination, the term "the remainder of" will be interpreted to be not further limiting. Appropriate correction is necessary.

7. **Claim 12** recites the limitation "taking each dimension as the dimension under consideration in turn, in conjunction with binning in the space based on each and every dimension not under consideration". It is unclear to the Examiner what the Applicant is trying to convey.

For purposes of examination, the limitation will be interpreted to be not further limiting. Appropriate correction is necessary.

8. **Claim 13** recites the limitation "the coarseness of the binning". There is insufficient antecedent basis for this limitation in the claim.

For purposes of examination, the term "the coarseness of the binning is decreased as further dimensions are considered as the dimension under consideration" will be interpreted to be not further limiting. Appropriate correction is necessary.

9. **Claim 15** recites the limitation "the method constitutes a space decomposition based dominance filtering process". It is unclear to the Examiner what the Applicant is trying to convey.

For purposes of examination, the limitation will be interpreted to read "the method includes dominance filtering." Appropriate correction is necessary.

10. Regarding **claim 24**, the limitation: "the dominance filtering portion performing a final dominance check on the further reduced set of solutions" is not clear.

For purposes of examination, the limitation will be interpreted to read as: "the dominance filtering portion performs a final dominance check on the further reduced set of solutions". Appropriate correction is necessary.

11. Regarding **claim 25**, the limitation: "a second portion that selects a first dimension from the plurality of dimensions, the first dimension being a dimension under consideration, the second portion:" is not clear. The term "the second portion:" seems to superfluous.

For purposes of examination, the term "the second portion:" will be interpreted to be not further limiting. Appropriate correction is necessary.

#### ***Claim Rejections - 35 USC § 101***

12. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

13. Claims 3 – 10 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

14. Claims 3 – 10 are directed towards a compilation or mere arrangement of data which is nonfunctional descriptive material. Nonfunctional descriptive material is nonstatutory (See MPEP 2106).

***Claim Rejections - 35 USC § 103***

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 1 – 8, 10 – 13, 16, and 19 – 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Damschroder** (USPub. No.: 2003/0088492) in view of **Ray, et al** (US Patent No. 6,018,722).

17. Regarding **claims 1, 19, and 25**, **Damschroder** discloses:

- generating a set of solutions of portfolio allocations in the space, the space having a plurality of dimensions [0059 – Examiner interprets *at least two assets* as Applicant's **set of solutions**];
- selecting a first dimension from the plurality of dimensions, the first dimension being a dimension under consideration [0059 – Examiner interprets *relationship matrix* as Applicant's **first dimension**];
- dividing the space into bins based on each dimension in the plurality of dimensions other than the dimension under consideration;
- determining a respective point in each bin with the most extreme value in the dimension under consideration [0059 – Examiner interprets *rescale each said vector or coordinate* as Applicant's **dividing the space into bins**];

**Damschroder** does not explicitly disclose determining whether points in the space are dominant or dominated, and removing dominated points from further consideration.

However, **Ray** discloses a system which selects specific securities, evaluates and determines the proper time to buy and sell customer securities, and generates buy and sell orders of securities for reallocation of customer assets [Abstract]. **Ray** teaches:

- determining, based on the point in each bin with the most extreme value, whether other points in the space are dominant or dominated [column 7 lines 22 – 30 – Examiner interprets *determining the impact of an individual security on a portfolio's risk/ reward ratio* is indicative of Applicant's **determining whether other points in the space are dominant or dominated**]; and
- removing the dominated points from further consideration, so as to result in a reduced set of solutions, the reduced set of solutions being used in investment decisions [column 7 lines 38 – 47 – Examiner interprets *generating a specific sell transaction* to include Applicant's **removing the dominated points from further consideration**].

Therefore, it would have been obvious to a person having an ordinary skill in the art at the time of the **Damschroder** invention to include buy and sell transactions into his system as taught by **Ray** because it allows use of technical and fundamental analysis on securities to remove low performing assets from a portfolio.

18. Regarding **claims 2 and 20**, **Damschroder** discloses:

- selecting a second dimension from the plurality of dimensions, the second dimension being a second dimension under consideration [0065 – Examiner interprets *second asset universe* as analogous to Applicant's **second dimension**];
- dividing the space into bins based on each dimension in the plurality of dimensions other than the second dimension under consideration [as discussed above];
- determining a respective point in each bin with the most extreme value in the second dimension under consideration [0059 – as discussed in the rejection of claim 1];



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However, **Ray** teaches:

- determining, based on the point in each bin with the most extreme value in the second dimension under consideration, whether other points in the space are dominant or dominated; and
- removing the dominated points from further consideration, so as to result in a further reduced set of solutions [column 7 lines 38 – 47 - as discussed in the rejection of claim 1].

Therefore, this claim is rejected for the same reasons as claim 1.

19. Regarding **claims 3 – 6, 21 and 22, Damschroder** discloses plurality of dimensions created in N-Space [0252 – 0256 – Examiner notes that *the model being displayed using linear algebraic projections* is analogous to Applicant's **geometric forms in the space**].

20. Regarding **claims 7 and 24, Damschroder** discloses performing a final dominance check on the further reduced set of solutions [0220 - Examiner interprets that determining initial, iterative, and *final vector components* as indicative of Applicant's **final dominance check**].

21. Regarding **claim 8, Damschroder** discloses converting the set of solutions to a maximization problem wherein the most extreme value is the greatest value in each bin in the dimension under consideration [0137 - Examiner interprets *determining greater returns* as indicative of Applicant's **maximization problem**].

22. Regarding **claim 10, Damschroder** discloses converting the set of solutions to a minimization problem wherein the most extreme value is the minimum value in each bin in the dimension under consideration [0137 - Examiner interprets *risk-adverse* as indicative of Applicant's **minimization problem**].

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23. Regarding **claim 11, Damschroder** discloses the competing objectives include risk and return [0137 – as discussed in the rejections of claims 8 and 10].

24. Regarding **claims 12, 13, and 23, Damschroder** discloses progressing through the plurality of dimensions [0017 - Examiner interprets optimizing portfolios for *return to risk ratios*, and *asset-liabilities* as analogous to Applicant's **progressing through the plurality of dimensions**].

25. Regarding **claim 16, Ray** teaches generating a set of solutions of portfolio allocations includes the generation of an efficient frontier [column 7 lines 6 – 21 - Examiner interprets *determining if securities are in a buy zone* as indicative of Applicant's **generating efficient frontier**].

Therefore, it would have been obvious to a person having an ordinary skill in the art at the time of the **Damschroder** invention to include *determining if securities are in a buy zone* as taught by **Ray** because it allows a user to adjust his portfolio to purchase securities when they are reasonably priced.

26. **Claim 26** is a method which is parallel to claims 1 and 2 plus the limitations of claim 3. Therefore, this claim is rejected for the same reasons as claims 1, 2, and 3.

27. Claims 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Damschroder** (USPub. No.: 2003/0088492) in view of **Ray, et al** (US Patent No. 6,018,722) in further view of **Official Notice**.

28. Regarding **claim 9**, neither **Damschroder** nor **Ray** discloses converting the set of solutions to a maximization problem is performed by multiplying the value of each minimization

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objective by -1. Examiner take **Official Notice** that multiplying by a constant to adjust data is old and well known in the art of portfolio management.

Therefore, it would have been obvious to a person having an ordinary skill in the art at the time of the **Damschroder** invention to include multiplying the value of each minimization objective by -1 because it allows parameters that tend to be opposed to each other, such as risk and reward, to be evaluated accordingly. For instance, if a numeric values were given to risk and return factors, a negative risk factor may be evaluated as a positive return factor.

29. Regarding **claim 14**, neither **Damschroder** nor **Ray** explicitly discloses the dominant points being retained for processing with a further dimension under consideration. However, Examiner takes **Official Notice** that one skilled in the art of portfolio management would know that keeping historical records of a security's parameters (i.e. price, earnings, and dividend) is advantageous in tracking a security's performance. Examiner interprets a security's parameters such as *price, earnings, and dividends* are analogous to Applicant's **dominant points**.

Therefore, it would have been obvious to a person having an ordinary skill in the art at the time of the **Damschroder** invention to include keeping historical records of a security's parameters because it allows an investor to track performance of a security over time.

30. Claim 15 and 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Damschroder** (USPub. No.: 2003/0088492) in view of **Ray, et al** (US Patent No. 6,018,722) in further view of **Ekstrand** ("Currency markets: Equilibrium and expectations", Lunds Universitet, Sweden, 2003, 141 pages; AAT C813732).

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31. Regarding **claims 15 and 18**, neither **Damschroder** nor **Ray** explicitly discloses **dominance filtering** or determining whether points in the space are dominant or dominated includes using a definition of **Pareto dominance**.

However, **Ekstrand** teaches that to achieve equilibrium in line with Pareto dominance, consumers need more expensive portfolios [Abstract]. .

Therefore, it would have been obvious to a person having an ordinary skill in the art at the time of the **Damschroder** invention to include Pareto dominance as taught by **Ekstrand** because it would be useful in predicting portfolio price increases [Abstract].

32. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Damschroder** (USPub. No.: 2003/0088492) in view of **Ray, et al** (US Patent No. 6,018,722) in further view of **Fernandez et al** ("A genetic search for exploiting a fuzzy preference model of portfolio problems with public projects", Annals of Operations Research. Basel: Nov 2002).

33. Regarding **claim 17**, neither **Damschroder** nor **Ray** explicitly discloses generating a set of solutions of portfolio allocations includes using an **evolutionary algorithm** to generate an efficient frontier.

However, **Fernandez** discloses solving a portfolio problem with non-linear programming techniques which uses an **evolutionary algorithm** [Abstract]. He further discloses determining an initial solution [page 8 of 14, midpage]. Examiner interprets *generating an initial feasible solution* as analogous to Applicant's **generating an efficient frontier**.

Therefore, it would have been obvious to a person having an ordinary skill in the art at the time of the **Damschroder** invention to include using an **evolutionary algorithm** as taught

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by **Fernandez** because it would achieve a strong improvement of the quality of solution [Abstract].

#### ***Cited Prior Art***

34. The prior art of record and not relied upon is considered pertinent to Applicant's disclosure:

- **Tan:** "Multi-dimensional method and system of simulating and managing an "Alliance Investment Portfolio", (USPub. No. 2003/0023533).
- **Carey, et al:** "Method of selecting securities for a portfolio", (US Patent No. 7,206,760).

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ed Baird whose telephone number is (571) 270-3330. The examiner can normally be reached on Monday - Thursday 7:30 am - 5:00 pm Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Kramer can be reached on (571) 272-6783. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the

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Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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